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## Journal of the Society of Arts.

FRIDAY, OCTOBER 24, 1856.

MEETING OF COUNCIL.—Oct. 22, 1856.

### THE EXAMINATIONS.

The Council of the Society of Arts, in further developing the system of Examinations which they have established, and in enlarging its sphere of action so as to include Commercial and Trade Schools, desire to state their views in thus extending its principle. The Universities, the Inns of Court, the Military and Naval Colleges, the East India Company, the Colleges of Physicians, Surgeons, and Apothecaries, the various Government Boards, the Committee of Privy Council on Education, all provide examinations of various degrees of strictness for candidates who desire to obtain degrees, certificates, or employment. There is, however, a considerable number of persons, members of Mechanics' Institutions, Schools, and other bodies in Union with this Society, with regard to whom little or no provision of this kind is made for testing the attainments of those who would wish to procure private employment on the ground of merit, or to obtain a formal judgment pronounced upon their acquirements by a competent tribunal.

The Council also desire to secure systematic study and punctuality of attendance in the several classes of the Institutions in Union with the Society.

On the recommendation of the Board of Examiners, they have passed the following minute:

"That no person shall be eligible for examination who shall not have been for six months at least previous to the day of examination, a member of a Mechanics' Institution, School, or other body in Union with this Society."

"That no graduate or under-graduate of any university of the United Kingdom, no student of any of the learned professions, no certificated schoolmaster or pupil teacher, shall be eligible for examination by the Society's Examiners."

"That no person under fifteen years of age shall be admitted to examination."

"That every candidate shall undergo a previous examination in writing from dictation, and correcting faulty English composition, to test the handwriting, spelling, and knowledge of English grammar possessed by each candidate."

"That no candidate shall be examined in more than three subjects."

The Council have the pleasure to announce that Mr. Henry Johnson, of 39, Crutched Friars, has placed the sum of £90 at their disposal in

such a manner as may best promote the success of the Society's Examinations.

The Council have received the following memorial, bearing the signatures of the Dean of Hereford, the Bishop of Winchester, Lord Carnarvon, the Bishop of Salisbury, the Hon. and Rev. S. Best, and Mr. Wyndham Portal.

*To the Chairman and Council of the Society of Arts, &c.*

We the undersigned, the Vice-Presidents and Officers, on behalf of the Hants and Wilts Adult Education Society, representing seventy-six Institutions in union with it, and now assembled in Annual Conference at Basingstoke, would respectfully draw the attention of the Council and the Board of Examiners to the subject of its examinations, praying it to take into its consideration the expediency of holding an examination for the southern counties, and especially those in which the Hants and Wilts Adult Education Society is directly interested, at Salisbury. The saving of expense to the candidates, the diminution of inconvenience to their employers, and the removal of many of the difficulties and drawbacks which attend their examination in the metropolis, are evident, and lead us, with every wish for the success of the Society's movements in this direction, and thankfulness for its aid, to pray it to remove an evident imperfection in its scheme, by extending its number of local examinations, and by giving to the South an advantage that the Society has notified its intention of giving to the North.

October 7th, 1856.

The Secretary was instructed to reply

That the Council, considering how recently the system has been established, are of opinion that it is not expedient for the present to have more than one centre for examinations in the country, and having already fixed upon Huddersfield for the year 1857, they are compelled reluctantly to postpone the acceptance of the invitation received from the Hants and Wilts Adult Education Society.

The Council have received the following letter:—

*To the Chairman of the Council of the Society of Arts.*

SIR,—The financial position of this country, and the enormous national debt, must always be subjects of great commercial importance, and of grave interest to Englishmen, even during the times of peace and prosperity.

Recent events of great importance, such as the influx of gold from Australia and California, the drain of silver to the East Indies and to China, the establishment of Free Trade, and the vast extension of our commerce, have materially altered the financial position, and will cause a revision of the subject to be very useful and interesting.

The important results that might be obtained by the renewed application to the reduction of the debt of the principle of compound accumulation, the essential principle of the Sinking Fund, which has unfortunately been abandoned, appear also to merit a further examination, and I am convinced that the interests of Arts, Manufactures, and Commerce, would be promoted if the Society would encourage the investigation of these subjects, and elicit the mature opinions of those who have studied financial science.

As, however, the funds of the Society are devoted to objects of great national interest and importance, I shall have pleasure in offering a prize for the discussion, should the Council approve of the proposal.

That is to say: a Prize of Two Hundred Guineas for the best Essay on the present financial position of this country, as affected by recent events, in which the principle of a Sinking Fund should be discussed, and also an investigation made as to the best mode of gradually liquidating the National Debt.

I am, Sir, your very humble servant,

HENRY JOHNSON.

London, 39, Crutched-friars, 14th October, 1856.

The above letter having been read—

"It was resolved that the best thanks of the Society be conveyed to Mr. Johnson for his very liberal offer of a Prize of 200 Guineas, and that the same be accepted on the conditions stated in Mr. Johnson's letter."

### WHAT TO LEARN.

#### THE HITCHIN MECHANICS' INSTITUTION AND THE SOCIETY OF ARTS EXAMINATIONS.

The Rev. Dr. Booth, F.R.S., delivered the following Address on the opening of the Exhibition at the Mechanics' Institution in this town:—

I shall speak to you this evening about the present aspect of education in this country, and the probable future phases of its development. I shall attempt to prove to you that it is no longer a mere social want, that it has become at least for us a political necessity. At Lewes the other day I dwelt at some length on the various difficulties, many real, some imaginary, which beset the path of the learner and impede his progress. I showed that many obstacles may be overcome by perseverance, while others may be eluded by a little foresight, and that in the same way, as happiness is not the exclusive enjoyment of the rich, nor misery the unfailing lot of the poor, so the facilities for acquiring knowledge are not so entirely the inheritance of those who are born to ample wealth and abundant leisure as the world generally imagines. Were it otherwise there could be no healthy circulation among the constituent elements of society. It would become stagnant. The rich being in possession of every social, intellectual, and moral advantage, would never take the lower place to make room for the poor man, bidden by the great Master of the feast to take the higher seat. Having endeavoured to show on that occasion how a young man should learn, I will now proceed to discuss what it is he ought to learn. Now, in the first place, let us contrast the present amount of knowledge, widely gathered and safely garnered up in books for the use and advancement of mankind, as compared with the stock the world was in possession of some three or four centuries ago. Because a careful examination of this matter will plainly show you that there is much valuable knowledge and much important information which the most highly gifted, and the most indefatigable must be contented to continue in ignorance of; that no length of life, no amount of leisure, would enable a man to master the circle of the sciences, as it is called; and that the existence of an Admirable Crichton, at all times a myth, has now become an impossibility. We must introduce into intellectual acquirements that principle of the division of labour which has long since been admitted into and acted upon in the various departments of mechanical and commercial industry. Knowledge, then, and ignorance, like virtue and vice, or pleasure and pain, if they do not go hand-in-hand, are yet not far distant from each other. Though the actual amount of our individual acquirements may increase, our relative ignorance grows in a much higher ratio, because the sum total of human knowledge, in all its various subdivisions of literature, science, and art, is marvellously augmented, from day to day, nay—from hour to hour. The horizon of human knowledge is widening and

clearing up in certain directions, while in others an impenetrable veil of cloud rests and ever will rest upon it. Now, this individual increase, coupled with relative diminution in the acquisition of knowledge, serves to draw tighter the bonds of human society, it makes us more dependent upon others, and our neighbours upon us. We find the very same principle holds in the community of nations. What would become of commercial intercourse or national sympathies, or the spread of civilisation but for this—that the means of supplying the multiplied wants of man in society are to be sought for in every clime. This makes the whole earth to be virtually "of one language and of one speech." Two centuries ago in this country, and indeed all over Europe, learning was synonymous with erudition; a man of great knowledge was a man who had read great books. In those days the inquiry was not, is it true? but who asserts it? Belief was founded neither upon reason, nor upon evidence, but on authority. Truth stood a veiled form at the entrance to the temple of knowledge, and her veil was not to be hastily or rashly drawn aside. There must be esoteric and exoteric teaching, that is, one form of doctrine for the enlightened, another for the ignorant. It is not at all strange that in the infancy of society, teaching should be based upon human authority, that the *ipse dixit* of the professor should supply the place of proof. The old Greek proverb applies as well to the childhood of nations as to that of individuals. Δει μαθηδοντα πιστεειν—the learner must have faith. The beginner must receive the elements of knowledge upon trust. He cannot until afterwards know them to be true. So very modern is that superstructure of science, in whose courts we all more or less learn to pay homage, that 200 years ago, you will be surprised to learn, mathematics were little known or even heard of in the University of Cambridge. The celebrated mathematician, Dr. Wallis, writes: "Mathematics were scarce looked upon as *academic* studies, but rather *mechanical*, as the business of traders, merchants, seamen, carpenters, surveyors of land, and almanac makers in London. Among more than two hundred students in our College (Emmanuel College), I do not know of two who had more than I, if so much, which was then but little, and but very few in that whole University. For the study of mathematics was then more pursued in London than in the Universities." What a change has since come over the spirit of the place. For many years past mathematics, with classics, have been cultivated at Cambridge, to the exclusion of the other not less important departments of literature and science. It is, however, a symptom of healthy progress that this contracted fashion is passing away, and that Cambridge will vindicate its just claim to the title of a University by recognising the universality of knowledge. And indeed the change has not come too soon. Look at the new sciences which have started into existence and shot up into importance within the last sixty or eighty years. One hundred and fifty years ago the little science there was then discovered could only be reached through the Latin originals, or by the help of Latin translations. It was in this way only that a man could study the works of Euclid, Archimedes, or Apollonius. So well established was this custom of burying living knowledge in the tomb of a dead language, that Lord Bacon having first thought out and written in English his great work on the Advancement of Learning, had it translated into Latin under the title "De Augmentis Scientiarum." Now, the range of knowledge is becoming so vast, so entirely beyond the compass of any one man's comprehension, however ample his leisure or untiring his industry, however tenacious his memory or intuitive his intellect, that no one can hope to master more than a small portion of our present knowledge; the possession of a nugget or two of this vast intellectual treasure must content us. The practical question, then, with which you have to deal is this—on what principle are you to make your selection. Believe

me, it is much better, under every point of view, to know two or three subjects well, than to have a loose rambling sort of notion as to what several are about. This is no needless caution at the present day, when a diligent sifter out of lectures may during a session assist at lectures on astronomy and astrology, optics and clairvoyance, medicine and mesmerism, mining and music, electricity and animal magnetism, geology and conchology, physiology and a whole heap of ologies besides. Do not imagine that a man is at all the more clear-headed, or even the better informed, for having all this farrago and jumble of odds and ends, of bits and scraps of knowledge shot into his memory, as a carter shoots rubbish into waste ground. A man's mind which receives impressions in this way is no better than the sheet on which one may see dissolving views thrown in a chromatic exhibition. The figures mix, and blend, and fade into each other; while, on the other hand, if you look through a telescope, although the objects you examine are but few, remember how bright and distinct they are, how precise their outlines, how sharp their edges. Much better is it for the traveller to have exact information about a few prominent distant objects by the help of a glass, than to gaze at a whole country's side through a haze or fog. I believe these remarks are not mistimed in this age of cheap books and light literature, as it is called. You are not to imagine that every hour you dream over a flimsy tale or threadbare fiction is so much time cut off from amusement, and given to mental improvement. The time thus passed in reverie over the pages of a novel may safely be put down under the same head as time passed in singing or dancing, or any other like harmless amusement. It is seldom better spent, and very often worse. I am not finding fault with this kind of reading, I only contend that it should not be set down for what it is not. It would be a very pleasant thing for all of us if we could acquire knowledge in this way, just as you farmers would find it very pleasant and profitable if you could grow wheat by merely casting the seed on the green sward. You can no more reap knowledge than you can reap corn without the sweat of the brow, whether it be from within or without. You may write letters with your finger in water, but you must use the chisel and the mallet—you must strain the muscles of the arm—to grave them in marble. When light reading was scarcely known, and novels were as ponderous as a blue-book on the currency, that profound thinker and acute reasoner Bishop Butler observed:—"The great number of books and papers of amusement which, of one kind or other, daily come in one's way, have in part occasioned, and most perfectly fall in with and humour this idle way of reading and considering things. By this means, time, even solitude, is got rid of without the pain of attention, neither is any part of it more to be put to the account of idleness, or spent with less thought, than a great part of that which is spent in reading,"—and to the same effect by another great authority:—"Nothing," says Dugald Stewart, "has such a tendency to weaken not only the powers of invention but the intellectual powers in general, as a habit of extensive and various reading without reflection. The activity and force of the mind are gradually impaired in consequence of disuse, and not unfrequently all our principles and opinions come to be lost in the infinite multiplicity and discordancy of our acquired ideas." These are very important points to be settled by you who propose to turn your attention to your own improvement. What are the considerations which are to determine your selection? For what point of the compass are you to make? While sailing down a river you want no compass to guide you, it is when launched upon the shoreless ocean that you require the aid of maps and charts, and all the help of scientific navigation to direct you. At the annual dinner of the Society of Arts in the Crystal Palace last Midsummer, our Vice-president, Lord Ashburton, in his address from the chair, wisely and well observed:—"Let

us but remember what we are about—we are fitting out man for the struggles of life; we are not fitting up a storehouse for the use of a philosopher. Man goes forth into the world as a soldier goes forth into a campaign. His wants are boundless, his means of carriage are small. Can any service be greater than that of planning out and assorting his pack of knowledge, rejecting all that shall cumber his movements, selecting all that may afford materials for the work he has to do? Surely there is no more urgent task for us to perform than that we should employ our wisest heads to consider man's powers—to consider man's necessities—to consider man's position in relation to his Maker, his duty to God, to himself, and to his neighbour, and then decide upon what principle that small pack of knowledge shall be composed, which he can advantageously bear with him into life. This is the question of questions,—a question that demands for its solution the highest qualification of the priest and the philosopher, while we leave the question to be decided by the unlettered mechanic. Man's wants are boundless; his means of carriage are small; life is short—school-time is still shorter—knowledge is infinite;—what shall his pack of knowledge be?"

Now, in reply to this important question, so forcibly put by Lord Ashburton, one may, I think, safely lay down two general principles for our guidance in this difficulty. First, that the knowledge in question may be used as an instrument of intellectual development, as an exercise of the understanding; and, secondly, that this knowledge may be capable of practical application. Regard not the acquisition of that knowledge which will not stand these two tests. Now, let me explain myself, and illustrate what I am saying. I know of no mental gymnastics which can stand for one moment in comparison with the study of logic. I mean the ancient Aristotelian logic, with its whole theory of syllogistic reasoning, and the perfectly rigorous demonstrations by which the propositions are established. I believe that, as a whetstone for sharpening and putting a fine edge on the understanding, giving great precision of definition, and accuracy in drawing legitimate conclusions from given premises, shutting out the truth or falsehood of the premises themselves, the old logic of the schoolmen, as they are called, stands unrivalled and unapproachable. The study of mathematics under this one point of view is not, in my opinion, to be compared with it. There may, however, be some doubt as to the position the study of geometry holds with regard to it; certainly none as respects analysis. Now, notwithstanding all this, and though it had besides the prestige of centuries in its favour, the study of the ancient logic has been almost if not quite abandoned in all our universities. The spirit of sound reasoning still hallows their courts, but its outward form reposes forgotten in the dust on their shelves. Why was this? Because the study of logic failed in this characteristic, that of manifest applicability, because it was hustled out of its place by studies of more palpable utility. Logic may have strengthened the grasp, may have nerved the intellectual muscle; but it provided no well-defined mental engine, like mathematical analysis, or the doctrine of atomic weights, which enable their possessors to master the stubborn resistance of nature. Your labourers in the field do not practise gymnastics, because they sensibly feel that their daily toil gives them quite enough of muscular exertion. So, in our own day, men cannot afford the time to whet their wits on barren studies, no more than our merchants can afford to take exercise of a morning by walking into town, when they are forced to rush in to their offices by the rail. Again, a knowledge of Roman law would be a most useful acquirement; but how can any one give his whole time to it, while new discoveries in knowledge are matters of daily expectation? I now approach another question of great delicacy, and one on which a wide diversity of opinion exists. I speak of the study of Greek and Latin in

commercial schools. We all of us know that it is no uncommon thing for a boy to spend five or six years of the most valuable, because the most impressive, period of his life in getting by heart the rules of a language he is never to have the good fortune to learn; to waste his energies in putting up a scaffolding for a building of which he is never to lay a single stone. What can be more ridiculous than that a boy who is intended to work at a trade, or to serve out goods behind a counter, should stupify himself in getting by heart dead rules and exploded forms? exploded by a more recent and deeper insight into the mechanism of language. And this is not the worst; but that same puzzled little boy must have crammed into his memory long strings of exceptions to those grammar rules, gleaned by the laborious inquisitiveness and microscopic curiosity of old grammar-makers, who had nothing on earth else to do but to gather them out of the musty pages of the forgotten works of third and fourth class authors. To a boy who is leaving school next half, to deal out soap and sugar from behind a village counter, or to look after a steam-engine, how valuable and important a fact it must be for him to know that an exception to such or such a rule is to be found in Columella or Varro. Sidney Smith puts this point very forcibly and wittily. "Cicero, in his 'Offices,'" says the reverend reviewer, "tells a whimsical anecdote of Cato the Censor. Somebody asked him what was the best mode of employing capital? He said, to farm good pasture land. What next? To farm middling pasture land. Well, but after that, what the next? To farm bad pasture land. Now, the notions which prevail in England respecting classical learning seem to me to resemble very much those which the old Roman entertained with regard to his favourite method of cultivation. Is a young man able to spare the time necessary to enable him to pass through the University? make him a good classical scholar. But a second, instead of residing at the University, must go into business when he leaves school. Make him a tolerable classical scholar. A third, has still less time to snatch up knowledge, and is destined for active employment while still a boy. Make him a bad classical scholar. If he does not become a Porson or a Heyne, he may learn to write nonsense verses. If he does not get on to Horace he may read the first book of Cæsar. If there is not time for such a degree of improvement, he may at least be flogged through that immemorial vestibule of learning—*Quis docet?* who teacheth? *Magister docet:* the master teacheth. Would to heaven that he taught something better worth knowing."

Now, I do not undervalue classical learning. As an instrument of developing the faculties, and available for that purpose with most minds, I think highly of it, but only when pursued to a considerable extent. "Drink deep or taste not," is the true maxim in learning classics. Now, if a man learns and knows the First Book of Euclid, even though he should never proceed to the second, he will have made an acquisition which will, so far, not only improve his reasoning faculties and exercise his memory, but will afford him knowledge, small though it be, that may be of considerable use to him afterwards. When it is intended that a young man shall proceed to College, I am convinced that he should endeavour to acquire a thorough knowledge of the classical writers of antiquity, not merely with the dead forms and fixed idioms through which they gave to the world their ideas, but with their modes of thought, their methods of investigation, with their political and ethical opinions, their solutions of social questions, with their views, sometimes luminous, often narrow, on the constitution of society. He should make himself thoroughly acquainted with the course of historical events developed under forms of government and modes of executive administration, differing so widely from our own, with the usages of peace and war, and the rules of international law so abhorrent from those of modern times. He will then learn how vague were their notions

of freedom, how little of individual liberty—our great boast and privilege—existed. How tyranny lurked under all their forms of government. He will then discover that while they pushed certain speculations to the very utmost verge and limit to which they have been advanced or can be extended by human reason, they in other abodes of knowledge stopped short at the threshold, unable to grope their way through the palpable darkness which lay before them, through the want of the guidance of a method, which, *cæca regens filo vestigia*, might lead them through the unexplored recesses of nature. And he will be humbled by the reflection, that while for them the paths of abstract science were illumined by the bright sunshine of truth, in other regions, where discovery is of far higher importance to man, they had but feeble and fitful glimmerings, and saw as but "through a glass darkly" the line of duty shadowed out before them; and that the wisest of them without "a light unto their paths," fell short of great truths which are now so obvious, so universally admitted, that they have passed into the constituent elements of our knowledge, into our common rules of action, and gone beyond the platform of discussion. When pursued to an extent even approaching to this, the study of classics as a mere instrument of mental discipline is invaluable. But to keep a lad for five or six years over the unintelligible rules of a grammar or syntax, which treat of things about which he has not the remotest conception—for to understand rules tacitly pre-supposes a knowledge of the language—and about which it is not intended he shall ever have any clearer notion, is, I say, an absurdity so incredible, that if we had not proofs of it in the misdirected instruction of almost every youth who goes to a middle-class school, we should utterly disbelieve it. Would not a boy exercise his memory quite as well, and somewhat more profitably, in getting by heart the beauties of Shakespeare, Milton, and our other classical English authors, as in grubbing his way through *quæ genus* or *as in præsentî*, or the Eton Latin grammar, or such like, to him unintelligible stuff. Oh, but some one will say, a knowledge of classics, however slight, improves one's English style. Now this, too, I question. If a tithe of the pains which are bestowed on the minutiae, on the refinements, on the elegancies of Greek and Latin prose and verse too, which is even still more absurd,—were the same labour and study, I say, expended on the acquisition of a pure, manly, vigorous, graceful, and idiomatic English style, we should not have so much incorrect, slipshod slang, as is daily written amongst us. The man who would blush at being detected using a phrase of doubtful Latinity, writes without compunction or hesitation any sort of shambling English that comes uppermost. Those old Greeks, whom we in vain attempt to rival, who were masters of the art of composition to a degree of perfection which has never since been equalled, knew no language but their own, and despised every other. To perfect and polish the Greek language they bestowed all their care, and that care was not bestowed in vain. Instead of copying their results we should strive rather to follow their mode of procedure. Again, it will be said the histories of those ancient nations supply us with examples of fortitude, heroism, magnanimity, and of all those bright virtues which adorn humanity. That to retard the influences of modern deterioration, we should keep those splendid illustrations before our eyes. Now this is true no longer, however just this view may have been in the infancy of modern society, when mankind had only just emerged from the long night of barbarism, when it was but natural that they should look upon the east with feelings of the deepest veneration, associated as it was in their minds with everything great, noble, and good: hallowed too by the belief that "the light which lighteneth every man that cometh into the world" first dawned upon mankind from Bethlehem's lonely shed. To them it was the birthplace of the only intellectual and moral greatness which throughout the earth's vast

round had raised man's race above the beasts that perish. But we have now no need to search the annals of antiquity for such examples. We must not laud them over-much, nor consign our own to dumb forgetfulness. The East lives in the memories of the past, the West is the stage of action at this present. We are no longer exclusively beholden to the records of Greece or Rome for standard examples of intellectual or moral greatness. We may boldly compare Shakespeare with Homer, or Newton with Archimedes, or Bacon with Aristotle, and the comparison need not be confined to these. In deeds of noble daring we do not concede the palm. To go no further than the late war: we may set it over against the proudest achievements of ancient chivalry. The battle of the Alma may well be matched with that of the Granicus; the field of Balaklava may vie with that of Marathon; and the heights of Inkerman are more glorious than the passes of Thermopylae. But neither in ancient nor modern story can we parallel the unsurpassable grandeur of the self-immolation displayed on board the sinking Birkenhead. You are all, no doubt, familiar with this noble manifestation of British fortitude, which braves death in the discharge of duty. The ship Birkenhead was engaged to carry troops to the Cape of Good Hope, when near the termination of her voyage, she struck on a rock at some distance from the coast of Southern Africa. In a short time it was ascertained that nothing could save the ship. She was fast sinking; the boats were all launched, and drawn up alongside the vessel. Did the soldiers, the strong men, breaking loose from all discipline in the face of impending death, rush forward and each for himself struggle to secure the best place he could in the nearest boat. Life was sweet, and why should he not make an effort to save it? No, that was not the way the British soldier acted. The women and children were placed deliberately and carefully on board the boats by their illustrious leader, Major Seaton, and sent off for the main land, while the men fell into their ranks on deck, as if on parade ground; thus silent, collected and undismayed, they stood, while the ship was slowly settling down. Unflinchingly they met their self-imposed doom. So these men died, neither urged on by some fanatical conviction, nor in the excitement of the battle field, nor in the presence of admiring multitudes of sympathising spectators, but far away beyond the sight of men, on the solitary bosom of the ocean, the wide horizon unbroken by a single sail or speck of life. Under His all-seeing eye alone, while the grave opened to receive them, they gave back this practical answer to their country's watchword, England expects that every man will do his duty. Whole armies are not equivalent to such a deed as this. So long as English History shall be read—so long as the English language shall be spoken—so long as the name of England shall be heard, the glory of this deed will not grow dim; and so long as true greatness is held in honour among men, the moral grandeur of this self-sacrifice will never be forgotten. Now, a nation which can claim such men, and glory in such achievements, requires not to be stimulated by the examples of the illustrious men of other nations, or by the records of departed greatness. The Englishman of our time can find in the poetry, oratory, literature, and science, patterns of excellence which cannot be surpassed. In the noble deeds of men, whose names as household words are familiar to our ears, he will behold examples as bright and glorious as any that are to be found in classic legend or modern history. But to return from this digression. There are other and more pressing considerations which will suggest to you, and to many others as well, the direction you ought in prudence to give to your reading. Just observe the change that is rapidly taking place in the standing and emoluments of what are called, by courtesy, the learned professions in this country. Take the Church, for example, and I am now looking at it not as a religious

institution, but simply as a profession. What startling but faithful pictures do the columns of the *Times* for the last few weeks disclose, of clerical starvation and surpliced destitution. The working clergy of the Church of England are fast lapsing into the original poverty, but not the primitive dignity, of the early Christian church; and the worst feature of the case, what renders a remedy to this state of things hopeless, is this, that for every wretched piece of preferment as it is called, there are fifty applicants. Why? you can hire a curate for less than you can a ploughman or a blacksmith. The labourer is worthy of his hire, and a labourer's wages he receives. Again, look at the condition of the Bar. It is stated, apparently on official authority, that there are no less than 40 sets of chambers now to let in the Middle Temple, and that the entries of students are about one-fifth of what they were 10 years ago. The calls to the bar have fallen to a mere nothing, compared with what they were formerly. Whereas, the Middle Temple used to call a few years ago from 120 to 130 a year, 20 is now about the average, and even this number shows symptoms of decrease. If this statement be true, and I have no reason to doubt the authority of the *Globe* newspaper, which asserts it, the profession of the bar, so far as it concerns the great body of the public, may be said to be extinct. There is no good citizen whose views extend beyond the present moment that will not regret this weakening of an honourable and high-minded profession, the great assertor of our national liberties, when those liberties had not as yet been placed on their present apparently secure basis. The medical profession is very little better. The physician of fifty years ago, his guinea fee and handsome carriage, are become scarce; the surgeon is rarely met with now out of large cities; the apothecary is fast disappearing. We shall all of us soon be in a position to say with Romeo in the play, "I do remember an apothecary." The general practitioner becomes the sole representative, and inherits the callings of all three, "tria juncta in uno," he prescribes, compounds, and operates. Thus the old established professions are starved by the multitudes which are crowded together in them, and are still crowding into them. While that vast variety of industrial employments, those unnamed and unrecognised productive professions which are unknown to the Earl Marshal, and which have neither station nor precedence in the herald's programme; these are the main support, the strongest stay of the vast industrial and commercial prosperity of England. Of these are the men who go forth and build the aqueduct, and level the railroad, and lay down the electric telegraph along the trackless wild, or submerge it beneath the ocean. Of these are the men who are the true pioneers of civilisation. Look at the work that remains to be done, and who are the men that are to do it? The vast regions of India and Central Asia, the trackless forests of Canada and the barren steppes of Australia are yet to be scored with railways, while earth's globe itself must be interlaced with the invisible bands, and the net work of the electric telegraph. Canals are to be dug, forests cut down, savage regions to be opened up and made accessible to civilisation and Christianity. The vast llanos of South America, the enormous basin of the Amazon, sufficient to grow corn for the whole of earth's existing population remain yet to be reclaimed. Who is to bring into the family of nations Australia, with all its secret hoards of unimagined treasures, reserved as it were by a special Providence to be discovered in our day to supply the exchangeable capital which renders such works a possibility. And now, what nation but ourselves is to undertake any of those great works? Surely not the effeminate and worn-out tribes of the east? Surely not those nations smarting under oppression, and whose thoughts are of insurrection. Not America, with that speck of black cloud on the southern horizon, and threatening a tempest as violent as one of their own tornados. We must supply, if not the manual

labour, the heads to guide, the science to suggest, and the capital to provide for their execution. This is the work which is given us to do, and a proud and glorious work it is. But, you will say, how does all this affect us? How do these considerations bear upon our interests? Why, in this way. You will see Englishmen everywhere abroad, conducting the great manufacturing and engineering establishments. On the platform of the locomotive, and the engine-room of the steamer, he is to be found. Now the elements of the knowledge which lie at the very root of all those industrial professions of which I have been speaking, and from which they draw all their strength, are at this present time being taught in the classes of Institutions such as this all over the country. Thoughtful men, of every religious sect and political party, admit the necessity of instruction. You have the means placed before you of acquiring the elements of those sciences on which rest all the great discoveries of this present period of man's history, whether it be the science of pure space or mathematics, with its applications to astronomy and navigation, or mechanics as developed in those great inventions, the power loom and the steam-engine, or chemistry in its multitudinous applications, embracing every variety of manufacture, or electricity, as exemplified in the wonder of this age, the telegraph. Need I name agriculture, which has become a practical science instead of an empirical art. There are other subjects, too, the mastering of which implies the acquisition of a large amount of useful knowledge. From these you are to make your choice; you will be guided in your selection by the tests I have laid down, and by the natural aptitude of your faculties to grapple with one subject rather than another, for the Almighty has constituted our faculties as diverse as the subjects on which they are employed. I do not undervalue knowledge of any kind. All knowledge is useful, or at least may be made useful. But how are we to learn these things, you will say; our time is short, our duties many, our employments engrossing. Were a ploughboy to say to me, I cannot let my master's plough and horses stand idle while I am working out a sum under the hedge, I should reply to him, To do so would be to violate your duty, and the discharge of duty has the first claim upon you. But let us consider this matter a little, and the present illustration will do as well as any other. It is a great error to imagine that you can work out a subject only when you have it before you in the shape of books and papers. You can often more clearly realise, bring it bodily before you, while you are walking in the fields, or journeying along the road, or going to market, or driving the plough. There is no need that you should "whistle at the plough for want of thought." It is told of Brindley, the celebrated engineer who constructed the Duke of Bridgewater's canal, that when perplexed with some engineering problem of peculiar difficulty, he used to betake himself to his bed, and in the silence and solitude of his chamber work out the solution. While engaged in your work, if it be merely mechanical, requiring no continued exercise of foresight or skill, you can turn a subject of thought over in your mind; you may start difficulties which can only be set at rest by going back for fresh food for thought to the book you had been reading. When, the other evening, you were gazing at that magnificent spectacle, the eclipse of the moon, predicted years ago as certain to occur at the precise moment of time it actually did commence,—and this, by the way, is an unerring test, a rigid proof, which the meanest understanding can comprehend, and which the most prejudiced must admit, of the reality of our knowledge, of the solidity of the foundation on which all scientific truth is based: I say, when you were examining this phenomenon, you observed how confused and dim every outline appeared, until you brought your glass to the exact focus. So it is with external things, and with subjects of internal contemplation. They are all clear in themselves, if we could only bring the mind to the

precise focus for their examination. And, while on this point, I may as well give you a caution or two. Many persons, especially those who are called quick readers, have a notion that when they get through a book, as they do through an article in the newspaper, they have mastered the contents of what they have been reading. They have fallen far short of anything of the kind. To read a book so as to expect to acquire any knowledge of it, if the book be worth reading, you must deal with it as a lawyer does with a brief. You must pencil-mark the important passages, underscore the points which the author makes, interline his arguments, and bracket his propositions. Then, read the book over again, and make an abstract of it; a little practice will give you facility; you will be surprised, in the first place, at the clearness, firmness, and precision of your knowledge of the book; and, in the next place, you will be astonished at the smallness of the compass within which the essence of a volume of considerable size may be condensed. The process reminds one of those preserved meats in air-tight canisters, which concentrate all the nutritious properties of the flesh and bones into a small compass. When you try this experiment, you will be surprised to find how much, even of the best books, are made up of what the masons call rubble stuff,—with matter which is either superfluous, irrelevant, or twaddle; so true is the remark of the critic, "*Aliquando bonus dormitat Homerus.*" But this you will say would take a great deal of time, would cost a world of trouble, and be a very irksome process besides. And how could we afford to spend so much time and trouble on one book, while new ones shower down upon us thick as leaves in autumn. Just so, and hence the truth of the old saying—Beware of the man of one book. The multiplicity of your reading so dilutes your attention, that it retains no flavour of any. Now, before I conclude, I would earnestly desire once more to impress this great truth on your minds—and it cannot be too deeply cut into them—that your power of learning does not depend so much upon what is called talent and cleverness, as on the ability to bring the whole light of the mind to a point, and to keep it there. But, this has been overlooked; talent and ability have been praised, as if they were the great instruments of success, while power of concentration, a great and rare gift, has been undervalued as plodding. How often do we hear, "Oh! he is a very clever lad, he sees things at a glance. I should not be surprised if, one day or other, he became Lord Chancellor;" and of another we hear, "Oh! he is a man of great genius, of wonderful talent, but he has never applied himself to anything," as if his great talents were an excuse for his idleness, and not the very contrary, if there be any truth in the parable of the talents. Such men are lights that shine, but they reflect no heat: and they are often admired by silly persons and flatterers—for flatterers stick to such men like barnacles to a ship lying idle, and growing foul in harbour. But, as I was proceeding to say, the great instrument of intellectual success is power of concentration, and this concentration is produced by the will excited to action by the emotions. How mysterious is the action of the memory! Do we not, all of us, remember fragments of trifling conversations, of our going once upon a time to a particular place, and of our meeting certain people: Have we not, all of us, a recollection of matters so insignificant as the flowering of a particular shrub, or of the cawing of a rook, or of being at school on a particular day, or of crossing the river in a boat, all of them events occurring in remote childhood, and engraved on the memory in characters of ineffaceable distinctness, while other events of great importance and moment, nay, whole subjects of study are clean gone and utterly forgotten. These are the mysteries of memory. Who ever forgets occasions of great grief or excessive joy? Let it then be an encouragement to you who are not geniuses, to you who have not talents to boast of, that learning a thing, that understanding a subject, is not so



much a matter of refined intellect as of unflinching perseverance and intensified attention. When some persons one day were extravagantly admiring—if it could be extravagantly admired—the transcendent genius of Sir Isaac Newton, and his wonderful powers of discovery, he is reported to have replied that the power of patient thinking was the only faculty in which he was conscious of being superior to other men. Patient thinking—what a volume is contained in these words. You are not to imagine that the men who have enriched the world with their discoveries, went into their libraries or studies once upon a time, and having shut their doors, sat down and said to themselves—we will now set about making discoveries, as a man might say, I will sit down and write a letter. No! discoveries are not made in that way, but rather in this. A stray hint or two is given on a subject, in which the mind takes a great interest. It may be dropped in accidental conversation, or a remark made in a book puts the mind in action, not in the study, but in the counting-house, or the open field, or possibly behind the loom. Another hint to these is added, the clue followed up leads to nothing; on doubling back it fastens on another. In this it is more successful: it leads to something not known before, but there it stops. The thing appears hopeless, and is dropped. But after awhile the mind involuntarily reverts to the inquiry, it broods in silence, it exemplifies the patient thinking of Newton, it tries some other clue, again is baffled, at last, it may be, some happy thought flashes across it as lightning from the cloud, the clue is seized, the curtain draws up, and the whole discovery stands revealed like a panorama, in all the freshness and brightness of unclouded truth then first made known to man. I would only add that these discoveries are published to the world in a very different order from that in which they are made. The chain which connects the new discovery with long-established truths is generally the last part of the work that is constructed. What I have said will explain to you how prizes, certificates, and such-like inducements actually enlarge the capacity for acquiring knowledge; the understanding computes the value of the inducement, and this calculation excites the emotions, and thus intensifies the power of attention. The hope of reward is one of the very strongest and most influential of the principles of human nature. For one man who is deterred by the fear of punishment, a thousand are stimulated by the hope of reward. Look at the comparative influence of these two principles on our criminal population. And this by the way suggests an overwhelming argument in favour of industrial education, I mean that education which includes the training of the head, the heart, and the hand, and no education for the poor deserves the name which does not embrace all three. This is the three-plied cord which binds into one strong compacted beam, those elements of man's nature which, separately taken, are frail and brittle. Look at the great moral changes which are now being effected in our juvenile criminals, by the reformatories which are doing so much good over all the country at this present time. How can any man with these patent established facts before him, stand up and deny the great use, the overwhelming need there is for industrial instruction. Now, here are youths, born in sin, pilferers from their cradle, thieves from their childhood, criminals on principle, who imbibed with their mother's milk the maxims of crime and the precepts of evil doing, who never heard aught of anything holy but in a curse or an oath, nor of anything sacred but in a sneer, nor of any social duty but in a scoff, nor of goodness but to be gainsayed, nor of benevolence but to be banned; here, I say, are young criminals caught like the young of wild animals, those pariahs of civilisation, outcasts of society, and then trained, regenerated, and disenthralled. Surely the Eastern tale, how the fountain of youth transformed the decrepitude of age and the wrinkles of the old into the vigour, strength, and beauty of the young, was not so

strange as the moral renovation which is now taking place in those reformatories. But I much fear the greater the good they do, the more criminals they reform, the more felons they set up in life, the more likely is it that this great philanthropic movement will be brought to a stand-still; because, when once it becomes generally known that the old proverb, "Honesty is the best policy," no longer holds good, but is superseded by this other, "Thieving is the best policy," when you systematically reward and cherish the evil doer, while you treat with cold neglect the poor but honest child, when you nationally realise the sneer of the satirist, *virtus laudatur et alget*, praise virtue and let her starve; when the paupers of our crowded lanes and festered alleys shall hear how that good-for-nothing boy Tom Styles, who was tried at the Sessions, and found guilty, was sent to a reformatory, where he learned a trade, and is now a magnate in Australia, the owner of flocks and herds, dining off gold plate and faring sumptuously every day; why the police office will become the primary Institution of the country instead of the school-room; the jail gate will have more attractions than the church door, and men will seek to graduate in prisons as a preliminary to success in life, as the youth of the upper orders now do at a university. You will realise the old fable, every guilty head you cut off from the hydra crime will be replaced by seven others in its stead. Now, do not mistake me, I do not undervalue or make light of the great present good which the reformatory movement is effecting. The criminals are a fact, and as a fact they must be dealt with. All honour to those men who have put their hands to this great and good work. At the same time, I say without the shadow of a doubt on my mind, that the good will be turned into evil unless as much at least be done for the virtuous as for the vicious portion of society. My argument is briefly this, if education and industrial training can so thoroughly cleanse these who have been dragged through the mire of guilt and crime, how much more ought they to do for those who have never offended, whose habits have not been warped. It is easier to keep a tree straight than to make it grow from crooked to straight. But you will say, such an education as you refer to for the whole of our poorer population would entail an enormous expense. Look at the cost of our reformatories for a few hundred criminals. Extend this system of industrial training to the whole of our working classes, and who shall compute the cost? In reply to this objection, I say that the great principle which ought to under-lie every system of national education is this, that every healthy child should contribute a portion of his labour to defray, at least in part, the charge for his school instruction. Let him give value for what he receives. But some ready objector will reply, would you have a farm and workshop attached to every national school? would you propose that the child who is now six hours a day at school, and learns but little, should have his time still further curtailed? Now I venture to assert this, that a boy who alternates three hours' labour with three hours' learning, will make more progress than another who is shut up for the whole six hours in a school-room. This is one of the cases where three added to three do not make six, but sometimes the result is even less. This you will easily understand if you will recollect what I have striven to impress on you, that the amount of knowledge on a given subject which you can acquire, does not so much depend on the time you give to it, or on the clearness of your understanding, as on the amount of concentrated energy and vigorous attention you bring to bear upon it. But I cannot discuss this interesting question further; I have too far trespassed on your time and attention. And now, in conclusion, let me add, that the only supposition which gives strength and consistency to all I have been saying is this, that we have each of us our given work to do, our plain duty to perform. "Is there not an appointed



time to man upon earth? are not his days also as the days of an hireling." Whatever we have to do let us do it with all our might, believing that one day or other we shall be called on to render an account of the talent placed in our hands. Were it otherwise, why should we not say with the Epicurean of old, "Let us eat and drink, for tomorrow we die." It is this consideration which is the ground of the striking difference between the Christian and the Heathen character; of the enduring energy and the firm purpose of the one, contrasted with the callous apathy and the reckless indifference of the other. Surely, if we believe that the vast Universe itself, with all its countless suns, and planetary groups, and warring stars, and nebular wreaths of matter; that this huge solar system of ours, with all its orderly arrangements and harmonious laws; that the solid earth we tread upon, the heaving pulse of the ocean, the might of the tempest; that life in all its varied forms, down to the minutest creeping thing which eludes the sight, that the tiniest leaf, the thistle down, the gossamer web, that veils each shrub and spreads from spray to flower, all have their appointed place, their allotted part, their fitting use, in the grand economy of God's creation; surely, I say, we cannot imagine that man alone is to be the one exception. The loftiest mountains are the accumulated results of the ceaseless action of the meanest of living things which die unrecorded and forgotten. Shall we shrink from our task, who know "when we rest from our labours that our works shall follow us." Let us then follow the path that is open to every one of us, doing all the good that we can in our day and in our generation, developing those faculties with which God has endowed even the lowest of us, knowing that He has promised, "wisdom and knowledge shall be the stability of thy times, and the strength of salvation."

## Home Correspondence.

### EXAMINATIONS.

SIR,—Not many years ago, the division of classes in this country was into "educated and uneducated." To our shame be it spoken, the distinction was most unequivocal: the rich was not so distinguished from the poor, or the noble from the lowly born, as the man of education from him who had never known that advantage. Common consent declared it; ordinary expression proclaimed it. It is a happiness to believe that we shall in a few years be able to speak correctly of the "educated and uneducated classes."

Those who were presumed by their position in society to have been fitted for the employments they sought, will, from henceforth, have a test applied, which, whether perfect or imperfect, at least shows the determination of the public upon such questions. Whatever may be the faults of army examinations, Foreign Office competition, East Indian civil service rivalry (and we may mention them at some future period), at all events they are guarantees of some degree of fitness for the appointment. Examination is there, competition does exist, and lucrative and honourable employment is to be the reward of superior intelligence. But, in this great educational movement, it has been thought no less desirable that the friendless urchin of the national school should be instructed in what is supposed to be fitting to his future career, than that the junior ensign of her Majesty's foot should be capable of writing her Majesty's English without reference to a Johnson's dictionary; and Government inspection is doing for the one what public examination professes to do for the other.

We take these two classes to represent, as regards the present question, the two extremes of society—on the one hand, the workhouse-boy; on the other, the candidate for the army, navy, or the public offices of the

country. The hedger and ditcher, the sheep or cowherd, the farm labourer; or the incipient general, admiral, or statesman. The country has at length demanded the proper education (we had better say *instruction*) of these classes, with a view to the peculiar object of each, and Government is employed in carrying it out as far as present opportunities will permit.

There is, however, a class of persons coming under neither of these two heads, to whom the promotion of education would be most important, and who must feel under the deepest obligation to the Society of Arts for the manner in which their case has been represented and considered. I mean the *mechanical and artistic population* of England—men who depend for subsistence, or at all events reputable subsistence, upon the exercise of peculiar intelligence. The proper education (*i.e.*, training) of the workhouse schoolboy should be generally as practical as possible, inasmuch as his life will deal with the stern realities of digging, ploughing, sowing, or reaping, cattle herding or milking, or farm labour in some of its numerous varieties; but the practical education of the mechanic or artisan (beyond a certain dexterity) is about the lowest part of his intellectual development. The thing that makes him valuable to his employer is the intelligence he exhibits in carrying out scientific views, in bringing to bear extraneous matter upon his legitimate work, or even in suggesting alterations and improvements in the details of his business. Towards the encouragement of such training the Society of Arts has taken the most important step.

It may be assumed that competitive examination is the only efficient method of testing the various powers of mind, or of discovering the value of previous education for its proper purpose. There attaches to the idea of examination, as a necessary consequence, either immediate reward or emolument of some kind, or an improved chance of obtaining the best employment. Present reward is neither a sufficient nor a legitimate motive to exertion. The chance of obtaining good employment, and honourable distinction in it, is. The great desideratum, therefore, should be, a "registered certificate;" and every endeavour should be used to induce the most influential firms in all our large manufacturing towns to recognise the certificate of the Society, and to give due preference to all persons distinguished by that mark of superior competency; and as I apprehend that it must be plain to all gentlemen engaged in arts, manufactures, or commerce, that their interests are bound up in the efficiency of their servants, I should imagine that but little difficulty would be met with on that score.

But the examinations themselves do appear to present very many difficulties; or rather, I should say, the extension of them over the country, so as to produce the fullest amount of good; bearing always in mind that the first object should be the general improvement of the working-man's condition and position, and the furtherance of art and manufacture, rather than the fostering of individual talent and excellence.

In all cases of this kind the funds at the disposal of the Society, or which can be calculated upon from other sources, are the first consideration; and if men are unable to do all the good they would, it is no less their duty to do all the good they can.

Much liberality has been displayed by the several donors of prizes for the successful candidates, but, as it really seems questionable how many are likely to have the opportunity of competing, unless some means of conveyance to the capital, and of subsistence while there, be discovered, it is surely no impertinent suggestion, that a portion of the prize money should be set apart, to meet some proportion of pecuniary assistance from the Institutions, or the persons themselves, for the expenses of the candidates during their stay in London. And, as one of the great objections on the part of masters and parents must ever be the temptations of a great city, I would add the hope that at some future time an arrange-

ment may be entered into for the respectable boarding and lodging of such persons as are in no position to be otherwise provided for, during their four days' sojourn in the metropolis. This must be a matter for consideration at some future time. At present the great object of the Society seems likely to be realised only by limiting the number of their candidates for the London examination; and I would endeavour to carry it out in the following manner.

It seems quite clear that, for the present, "young men of the class under discussion cannot present themselves in very large bodies, but that they may yet come in numbers sufficiently large to embarrass the Society, should any undertaking as to expenses be entered into by the Society. Pecuniary arrangements might, however, be entered into, if only a certain definite number were permitted to appear at the Society's rooms; and it would tend to increase the public confidence in their moral tone, as well as to deter the idle and dissolute from a London visit, if some such scheme as I have ventured to propose could hereafter be realised.

In the meantime, to secure only the attendance of such young men as are likely to do credit to themselves in an examination of high character, might it not be well to institute, by means of itinerant district examiners, of the Society's choosing, local preliminary examinations? Such gentlemen, by co-operating with provincial boards, listening to their opinions, and forming by previous examination as accurate an idea as possible of the candidates' merits, might easily select one or two, or even more (if desirable), from each district, to send up for the final examination by the central board. This plan, as it seems to me, would relieve the London examiners of much trouble, the parents of many young men of much anxiety, and would enable the Society to entertain the question of pecuniary assistance with much better hope of success. It would still be open for the victims of disappointed ambition or over-estimated talent, in the district examination, to avail themselves of the opportunity for further trial in London: only, be it understood, at their own expense.

Perhaps it is impossible for the Society, in its distribution of certificates, to enter upon the question of moral excellence. We must be content to take studious habit as the guarantee for general character. Yet I cannot but think that some sort of testimonial from teachers, lay or spiritual, might be made (without offence to any denomination of Christians) one of the conditions of the Society's certificate.

There are so many questions involved in this, as to the superiority of oral over written examination, or the reverse, as well as to the general nature of examination and its particular subjects, that I shall close this letter with the intention of troubling you further upon the subject at a future opportunity.

I am, &c.,

CHARLES CLARKE.

Esher, Sept. 23, 1856.

## Proceedings of Institutions.

ROYSTON.—The recently published report of the "Exhibition of Objects Illustrative of Science and Art, and their Applications to Manufactures, Natural History, Archaeology, &c." held at the Institute, states, that on Monday, 12th May, the Exhibition was opened, under the patronage of the Earl and Countess of Hardwicke, Lord and Lady Dacre, and the Rev. L. V. and Hon. Mrs. Harcourt, when a remarkable collection of natural and artistic objects was displayed throughout the new building and in the grounds. The exhibition was kept open twelve days, and the average number of visitors for each day was 578. Two evenings were specially devoted to mechanics and domestic servants; and two mornings to

National, British, and other schools, and the attendance of these classes was great beyond expectation. Robert Hunt, Esq., F.R.S., delivered a lecture on the exhibition. On the 28th of May, after the exhibition, the committee gave a promenade concert, and on that occasion the Testimonial Clock from the members of the Institute was presented to the Honorary Secretary by the President. A sum of £200 was realised by the exhibition, which was devoted to the reduction of the building debt. The committee received many donations for the library, and the nucleus of a museum is now formed, which they hope will continually receive additions.—On Wednesday evening, the 15th inst., Adolphus Francis, Esq., (from London) gave a Dramatic Declamation from Sheridan Knowles's "Virginius."

YORK.—On Tuesday evening last, the Lord Mayor gave an address to the members and friends of the Institute of Popular Science and Literature, as a suitable introduction to the lectures of the winter session. His lordship said, "If we regard the tone and spirit of the British Court—if we notice the line of procedure now adopted by our most influential noblemen and greatest statesmen—if we contemplate the discoveries and events which are constantly occurring around us, with their manifest tendencies, we must, I think, feel strongly impressed that industry and science are daily advancing in importance, and will, year after year, exercise an increasing influence over the destinies of this nation and of the world. We must not look upon the Exhibition of 1851 as an isolated event, as merely a happy idea of a great prince, but we should also look upon it as an expression of the British empire and the age in which we live, as an event deeply significant as to recent progress and future development. In former times, the principal delights of courts were the tournament, the chase, the mimic fight, the review. The only honourable profession, anciently, was that of arms, though the advocate, and, in later times, the banker, were allowed to make some kind of approximation; but labour and industry were for the most part frowned upon and kept down in ignorance and degradation. The Cyclops, who were perhaps typical of mechanical labour, were placed by the ancient poets in caverns under ground, and Apollo was represented as having even made war upon them and slaughtered them. The fine arts seem often to have joined in treading down sturdy and honest labour, but a change has long been gradually taking place. Labour is being raised from his degradation—from being a mere drudge—and is becoming honourably associated with the fine arts and with science. It is of the utmost importance to this country, and the only means, humanly speaking, by which she can maintain her high position amongst the nations of the earth, that her labour and industry should be economised and directed by intelligence and science. Our vast wealth and boundless stores of coal and iron will, in these days of easy transit, be more for the benefit of other nations than our own, unless we avail ourselves of them by scientific labour and the best mechanical appliances. The notion that labour should be kept in ignorance is as absurd as if a master should wish to put out the eyes of his servant lest he should observe their physical resemblance to each other. Science is the enemy of tyranny, but she is the friend of authority and order. The prospects of this country were never more favourable and inspiring than at present, and the elevation of Mr. Strutt, while in the atmosphere of commerce, to the peerage, forms an era in the internal history of this country, which is of no ordinary significance. The last stigma is thus removed from commerce, and the laws and usages of England now proclaim—

"Honour and shame from no condition rise;  
Act well your part—there all the honour lies."

Here perhaps I may be permitted a digression on the subject of labour. Many young men are inclined to suppose that a life of toil is degrading. They forget that

labour is indispensable to the health of both body and mind. Most members of the aristocracy used to labour hard in galloping across the country after foxes, while they would have thought it very derogatory to their rank to turn their labour to any useful or profitable account. One surely has but to mention this in order to demonstrate its absurdity. Many young men are sighing for "Plenty of money and nothing to do," but they do not bear in mind that an idle man cannot be a happy man.

"Absence of occupation is not rest,

A mind quite vacant is a mind distress'd."

"Life's cares are comforts, such by Heaven designed ;

He that has none must make them or be wretched.

Cares are employment ; and without employ

The soul is on a rack ; the rack of rest

To souls most adverse ; action all their joy."

The decree has gone forth as to man, "In the sweat of thy face shalt thou eat bread, till thou return unto the ground," and none can escape this without incurring a heavier penalty.

"Come hither ye that press your beds of down  
And sleep not ; see him sweating o'er his bread  
Before he eats it—'tis the primal curse,  
But soften'd into mercy ; made the pledge  
Of cheerful days and nights without a groan."

Show me a man who does not labour, either with his head or his hands, and no matter what his rank or possessions, you present to me a great sufferer. If he render no service to his fellow man—if, having the ability and opportunity, he add nothing by his own exertion to the common store, he is but an incumberer of God's earth—a species of locust, and the world will have no reason to lament when he is consigned to his grave. For my own part, I should feel on better terms with my own reflections to break stones by the side of the high road than to eat the bread of idleness, and consume the products of the earth, without contributing some service in return. The soldier is not careful to conceal the scars which he has honourably received in the service of his country, and let not honest labour be ashamed of his horny hand and brawny arm. In olden times, Vulcan is represented as an unsuccessful suitor to Minerva, but in modern times we may hope to see labour and science indissolubly united, and exercising a benign and mighty influence over the destinies of mankind. Let no young man despise an honest vocation, because it involves manual labour ; neither let him cast an envious eye towards the learned professions, or towards any occupation almost exclusively intellectual. The balance of advantages and disadvantages in each position is so nearly equal, that it depends for the most part upon the individuals themselves, as to which position is the most conducive to a comfortable and useful, and, we may also add, an honourable life. If the body have not sufficient exercise, intellectual employment is feverish, and enfeebling to the general character, while, on the other hand, manual labour is too often accompanied with almost a total torpor of the mental faculties. The world is fast opening its eyes to much of its folly and injustice in these respects, though in China, I am told that even yet (and many of you will at once understand why this particular instance should readily occur to my recollection), those who are engaged in the preparing of the skins and hides of animals, are cut off, as if leprous, from the rest of society, and are treated as the scum and offscouring of all things ; but in this country, anything like a ban upon any species of honest, useful labour is fast disappearing. The sooner it wholly disappears, and the more intellectual and corporeal labour are interwoven, the better. A life of active employment, with a moderate amount of leisure for mental cultivation is perhaps, upon the whole, the most favourable for strength of body and mind, and for general usefulness of character. Let no one lament that he cannot devote the whole day to literary studies. *Sit nihil nimium* Most of us have sufficient leisure for as

much as we can well digest. Even the most gifted must be content to be ignorant of very many things ; and the higher we rise in attainments, the more extensive will be our view of what remains unexplored by us. A little learning is good, unquestionably good, as far as it goes, if it do not make us fancy we know a great deal. If we are disposed and are trained to cultivate our mental faculties, and if we are observant, for it is the old case of "eyes and no eyes," we shall find that the men and things we meet with in the most ordinary walks of life are fraught quite as much as books with important data for mental exercise and information. The knowledge we gather from books is in some respects second-hand ; while what we pluck for ourselves by our own observation is fresh and unadulterated, though there is of course much knowledge which is quite out of our reach except through books. It should never be forgotten that the paramount object of our literary and scientific pursuits should be to fit us for a more efficient discharge of the duties connected with our particular calling, and the position generally which we occupy ; and he who allows himself to be drawn away into a neglect of that by which he obtains his bread, is following an ignis fatuus, which, in all probability, will, sooner or later, lead him into sorrow and disgrace. The surest and shortest way for any man to competence and eminence is to attend well to that vocation upon which he directly depends for obtaining a livelihood, and for his position in society. Before making this long digression, I was referring to the growing importance and increasing influence of labour and science in this country. Improvements cannot rise much higher than the general intelligence of the masses of the people. Most of us can call to mind how the introduction of machinery into manufactures was encountered with the most inveterate prejudice, and with alarming demonstrations of violence. If that opposition had been permanently successful, it would have been suicidal—it would have been fatal to the well-being of this country. The president of the Association of Mechanical Engineers mentioned a few days ago, at Glasgow, that in spinning fine numbers of yarn a single workman on a self-acting mule can now do the work of 3,000 hand spinners with the distaff and spindle, and that in the manufacture of lace one man with a machine can now do the work of 8,000 lace-makers on the old principle. Thirty years ago, the labour of trueing a surface of cast iron by hand labour was 12s. per foot ; but now, by the planing machine, this can be accomplished at a cost of less than 1d. These are not exceptional cases ; "*Ex uno disce omnia* : " they are but specimens of the marvellous advances which have been made in almost every department of chymical and mechanical action. The powerloom, the self-acting mule, the thrashing machine, the locomotive, the electric telegraph—which will soon belt the world with its lightning zone, Bessemer's process of converting the worst iron into the purest malleable iron and steel, and so on, are perhaps but mere fragments of what we may anticipate from a wider diffusion of scientific light and instruction. I may perhaps here stay a moment to instance, that by Bessemer's simple invention of introducing a stream of atmospheric air in supersession of the puddling process, which is conducted by men nearly naked, on account of their broiling position, and looking like demons, millions of pounds sterling will be annually saved to this country. The cost per ton of bar iron will be reduced from £8 10s. to £6, and of steel from £20 to £6. Science smiles at the opposition of mere brute force, and either, like Jackson, causes an army of hostile influences to destroy one another, or, like a magician, paralyses and withers with a glance. War, and agriculture, and trade must alike visit with increasing assiduity the laboratory and the smithy for the weapons with which to subdue and to triumph. As knowledge increases, we may also expect the people generally to become more alive to the importance of cleanliness, of ventilation, and of drainage. What a field is thus opened to our contempla-

tion, and what incentives there are to an increased and general cultivation of scientific pursuits. It is admitted on all hands that Mechanics' Institutes have greatly contributed to the improving aspect of the times. It was only in the year 1823, little more than thirty years ago, that through the exertions of Dr. George Birkbeck and others, the foundation of the London Mechanics' Institute was laid, but since then the number of Institutes and kindred associations throughout England, Wales, Scotland, and Ireland has reached a total exceeding eight hundred, with every prospect of a further augmentation. It is true that Institutes have been greatly dependant for their support upon the higher classes, and they have not sufficiently reached the classes for which they were in the first instance chiefly designed. But we have reason to be thankful for what they have accomplished, and it is to be hoped that, by and by, they will accomplish much more. Most of us, I have no doubt, are prepared to subscribe to the important declaration, made by Lord Stanley, a few days ago, at Oldham, in Lancashire. "The establishment of an athenæum, a lyceum, an institute, call it which you will, in every large town of England, is no longer a mere luxury which may be enjoyed or dispensed with at pleasure, but has become an essential and integral part of our social organization. I know all that has been, and may be, said against these institutions; and it is possible that their actual results may disappoint unreasonable expectations on the one hand, as they have dispelled unworthy fears on the other. But I deny in toto what is sometimes affirmed—that the experiment of their establishment has been hitherto a failure." Allow me to congratulate you upon the present condition and prospects of the York Institute. Your numbers have been higher previously than they were last year, but still the course of this institute from its commencement in an humble building in Bedern, in the year 1827, and from the erection of this hall, in 1846, must have been highly satisfactory and encouraging to its promoters. I confess, I have considerable expectations from the session upon which we have entered. At their first meeting a few days ago, the committee mustered in greater numbers to open the campaign, than I have before witnessed. You will have noticed the very attractive list of lectures, but I would lay the principal stress upon the new arrangements as to the classes, for, after all, it is there where the substantial work of institutional training and education is to be accomplished. I trust that the young men of this city will avail themselves of this rare opportunity of tuition under gentlemen of such eminence, and I trust that there will be an adequate response, and that this will be a new and important epoch in the history of this institute. If this happily be the case, I hope to live to tell you to whom you are principally indebted for it. The Society of Arts, under the presidency of his Royal Highness Prince Albert, and comprising amongst its officers some of the most eminent of our nobility and literati, has decided to hold a provincial examination, next June, of candidates from the northern institutions in connexion with that Society, and we had some ground for hoping that such an examination would be held at York. Our exertions, however, in favour of the Yorkshire Union of Institutes in favour of Huddersfield, where their annual meeting is to be held next year; and the Council of the Society of Arts have informed me, through their secretary, that on this account chiefly, *though with reluctance*, they have on this occasion passed us by. I ought perhaps here to mention, to the great credit of the Huddersfield Institute, the very large number of efficient classes connected with it, which are greatly sustained by the masters of the college there. The subjects of examination will be all or any of the following:—**Mathematics, mechanics, chemistry, physiology, botany, agriculture, geography, English history, English literature, English composition, writing from dictation, Roman history, Latin, French, German, and free-hand drawing**

in outline from objects. The prizes are, one of 25 guineas, and various sums of 10 guineas, and also certificates of honour, which will be carefully registered so as to be available as testimonials of much greater weight than any private recommendation, and there are also two government appointments that will be awarded as prizes. I hope that in some of the departments, if not next year, at all events when an examination is held here, some York candidates will obtain an honourable position, but if they only try they will assuredly reap an adequate though it may be an indirect reward, like the young men in the fable, that ploughed deep their father's estate, in the expectation of finding a hidden bag of gold. There is another topic to which I would for a few moments invite your attention, but there is not time now for more than a passing glance. The other sex have not availed themselves of this institute to so great an extent as they have of a few institutes in other places. We were referred, a few evenings ago, to Mr. Prentiss' account of the praiseworthy conduct of a number of mill girls, with not large wages, at Lowell, in America, and our attention was called to the surprising number of churches, and ministers, and literary advantages which they have secured, without much self-denial, through their own judicious combination. I am glad that the importance of female training and education is more deeply felt than it has been, and that this subject is now receiving great consideration in high and influential quarters. Whether the advantages of these institutions, beyond the library and lecture hall, can be greatly extended in this direction, or whether separate institutions would be preferable, is a question upon which I will not now enter. Much would probably depend upon the special arrangements that could be made and the special circumstances in each locality. We cannot easily overrate the importance of elevating and strengthening the female character with scientific and literary information. In my humble judgment, a female cannot be too much "a blue stocking," provided she is also well versed in the useful common things of life. I need not expatiate upon the mighty influence for good or ill which sisters, and wives, and mothers exercise; and a very cursory glance at history is sufficient to satisfy us of the truth which is couched under the poet's question, "Can man be free where woman is a slave?" While, however, we extol mental culture, we must not forget that the kitchen is as much a part of feminine dominion as the drawing-room, and a kitchen out of order is as uncomfortable to a household as a stomach out of order is to the human frame. Even those who are above the humbler classes, are ill prepared for the duties and vicissitudes of life if they have only accomplishments, and are not practically acquainted with culinary affairs, with the making and mending of articles of clothing, and with the common useful things of everyday domestic life. In hastening onwards, a suggestion occurs to me which is, perhaps, not undeserving of further consideration. The Yorkshire Philosophical Society, the School of Design, and some other associations in this city, have many objects in view which are kindred to those of this Institute, and perhaps a further combination or union is practicable, by which greater strength may be obtained and the common end more economically and effectually accomplished. The Public Libraries' Act, 1850, may also, by and by, be a useful ally in carrying on the work of popular instruction. I now approach the last particular topic to which I shall at present advert. Mechanics' Institutes are often impeded and greatly checked in their range by having to teach some of their members the simplest rudiments of knowledge, such as reading and writing; and those who are the most destitute and ignorant have the least desire for information and instruction. Mechanics' Institutes take rank amongst the educational agencies of the nation, and following a high authority on a recent occasion similar to this, I venture to offer a few observations upon one of the most agitated

questions of the present day. The difficulty in that question is the religious element. Too many are determined that if they cannot obtain the kind of spiritual education which they think orthodox, that the masses shall not have even mental education. Why not obtain all the education we can, and make that portion compulsory upon all as to which we are all agreed? But many would reply that if you educate without religion, you merely augment the power of doing mischief. Upon such a principle as this you might say (though no one can be more in favour of religious education than I am), if we find a family sickly and manifestly suffering under the influence of bad drainage and imperfect ventilation, we must on no account administer any relief without religious inquiries and provisions. A healthy heretic will do more mischief than a sickly one. I state the argument, and I need not multiply instances to illustrate it. If a certain portion of our clergy and ministers would lay aside their unsound apprehensions and jealousies we might at once have education universal in this country—we might at once bring our wide, waste-howling deserts of mind into magnificent cultivation. I need not travel beyond our institutes for a confirmation of their views. Where would they have been if their founders had waited for either political or religious uniformity? We interdict all party politics and controversial theology as the least of two evils, and yet we are not traitors either to our country or to our God. With Wordsworth I would say—

"Oh! for the coming of that glorious time  
When, prizing knowledge as her noblest wealth  
And best protection, this imperial realm,  
While she exacts allegiance, shall admit  
An obligation on her part to teach  
Those who are born to serve her and obey."

In closing this address, I would say to the young men of this Institute, read novels as cautiously as you would take fermented liquors. Real actions and occurrences are the fresh, living water. Cultivate your minds—take care of God's noblest temple, the body—covet earnestly the best gifts, those spiritual, unfading gifts, which are denied to none who truly seek them—guard scrupulously the Lord's day—and overlook not earth and Heaven's Magna Charta, the Bible. Ascertain carefully the path of duty, and tread it fearlessly and perseveringly, through good report and through evil report. "Fling away ambition." Grasp not at fame. "Avarice of fame," says Byron, "is avarice of air." Grasp not at fame, worth's shadow, but secure the substance. Be not ashamed of a humble parentage, or a humble occupation. Be not ashamed of poverty, or even of a small amount of natural endowments, lest you should thereby reproach the King of Kings; but be ashamed of misspent time and misdirected talents. Be always ashamed of vice. A wicked man cannot be truly brave or noble.

"Thus oft it haps that when within  
They shrink at sense of secret sin,  
A feather daunts the brave;  
A fool's wild speech confounds the wise,  
And proudest princes veil their eyes  
Before the meanest slave."

Finally, in the words of our own immortal dramatic bard,

"Let all the ends thou aims't at  
Be thy country's, thy God's, and truth's."

—The Rev. H. V. PALMER, in complimentary terms, proposed a cordial vote of thanks to the Lord Mayor, for his valuable address, and suggested that his lordship should give his permission to have it printed.—T. S. NOBLE, Esq., seconded the motion, which was passed with acclamation.—The LORD MAYOR returned thanks, and the company then separated.

## PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[From Gazette, October 17th, 1856.]

Dated 26th August, 1856.

1992. Alfred Vincent Newton, 66, Chancery-lane—An improvement in breech-loading cannons and other ordnance. (A communication.)

Dated 1st October, 1856.

2292. George Flint, Skinner-street, Bishopsgate Without, Thomas Wood and Edward Wood, Tachbrook-street, Pimlico—An improved punching press or machine, adapted to the purposes of stamping, coining, slotting, and embossing, and for cutting metal and other substances.

2294. John Holman, Western Clubs, Topsham—Improvements in ships' rudders.

2296. Henry Naylor, Bacup, Warper, and James Crabtree, Rochdale—Improvements in and applicable to machines, commonly known as "warping mills."

2298. Alfred Vincent Newton, 66, Chancery-lane—Certain improvements in sewing machinery. (A communication.)

2300. Charles Durand Gardissal, 10, Bedford-street, Strand—Improvements in stoves and apparatus for heating or warming greenhouses, which may also be used for other warming or heating purposes. (A communication.)

2302. David Jones, Greenhill-villa, Ragland, Monmouthshire—Certain improvements in obtaining and applying motive power.

Dated 2nd October, 1856.

2306. James Whitehead, Dukinfield, Cheshire—Certain improvements in machinery or apparatus for preparing and spinning cotton and other fibrous substances.

2368. Victor Renault, Bordeaux—Improvements in regulating and directing the steam escaping from the cylinders of locomotive engines.

2310. Henry John Distin, 31, Cranbourne-street, Leicester-square—Improvements in the means of regulating the tone of kettle drums. (A communication.)

Dated 3rd October, 1856.

2314. John Hopkins, 5, Lower Oxford-street, Whitechapel—Improvements in the construction of furnaces.

2318. Lemuel Wellman Wright, Sydenham—Improvements in gas meters.

2320. David Ogilvy Boyd, 78, Welbeck-street—Improvements in constructing and arranging smoke and air flues.

2322. Richard Archibald Brooman, 166, Fleet-street—An improved lathe or tool suitable for turning, drilling, boring, planing, and smoothing, also for grooving, mortising, and slotting, parts of which tool may be applied to lathes generally. (A communication.)

2324. Robert and James Haslam, Preston, Lancashire—Improvements in looms for weaving.

2326. Charles Durand Gardissal, 10, Bedford-street, Strand—Improvements in the manufacture of cement. (A communication.)

Dated 4th October, 1856.

2328. Alfred Vincent Newton, 66, Chancery-lane—Improvements in supplying steam-boilers with water. (A communication.)

2330. Maria Farina, Hanway-street, Oxford-street—An improved tooth powder. (A communication.)

Dated 6th October, 1856.

2332. John Silvester, Woolwich—Improvements in the application of steam or air in the production of motive power.

## WEEKLY LIST OF PATENTS SEALED.

Sealed October 17th, 1856.

928. Uriah Scott.  
930. Thomas Walker.  
932. Julius Jeffreys.  
938. Edmund Hunt.  
939. Chas. Frederick Stansbury.  
940. William Adkins.  
960. Alfred Vincent Newton.  
964. David Lloyd.  
989. Frank William Blacket.  
993. James Hardacre.  
1017. Thomas Webster Rammell.  
1049. Robert Tolmie Campbell.  
1059. Alfred Chadburn.  
1063. John Wright.  
1081. James Gray Lawrie.  
1120. William Edward Newton.  
1152. George Clark.  
1647. William Bridges Adams.  
2033. Lazarus Simon Magnus.

Sealed October 21st, 1856.

955. William James Cantelo.

967. William George Armstrong  
970. George Forster.  
972. James Garnett.  
974. Thomas Squire and Charles Frederick Claus.  
975. John Shae Perring.  
1014. James Stead Crossland.  
1019. William Pilling.  
1021. John Smith and William Craven.  
1028. Nathan Defries and George Henry Bachhoffner.  
1029. Henry Mapple.  
1036. Nathaniel Smith.  
1074. Jean Périaud.  
1075. Robert Roysds.  
1119. William Edward Newton.  
1128. William Edward Newton.  
1196. Alfred Vincent Newton.  
1284. John Harris Heal.  
1335. Rd. Archibald Brooman.  
1358. William Edward Wiley.  
1616. William Bridges Adams.

PATENTS ON WHICH THE THIRD YEAR'S STAMP DUTY HAS BEEN PAID.

October 16th.

2399. George Louis Stocks.

October 17th.

2388. George Frederick Chantrell.  
2435. Jean François Felix Challeton.

October 8th.

2436. Pierre Marie Fouque, Louis René Hebert, and Vincent Etienne Doret le Marneur.